

What Is Claimed Is:

1. An electrochemical sensor comprising:

a solid electrolyte element including at least one first electrode, at least one second electrode and at least one heating element, the at least one second electrode being situated closer than the at least one first electrode to the at least one heating element, the at least one second electrode being coupled to ground, the at least one first electrode coating with the at least one second electrode and being negatively polarized.

- Sub A 1  
2. The sensor according to claim 1, further comprising an arrangement for providing a negative operating voltage.

3. The sensor according to claim 2, further comprising a measurement circuit, the negative operating voltage powering the measurement circuit.

- Sub A 2  
4. The sensor according to claim 2, further comprising a circuit arrangement for analyzing a negative probe voltage, the negative operating voltage powering the circuit arrangement.

5. The sensor according to claim 1, wherein the at least one second electrode lies in a layer plane of the solid electrolyte element, the at least one second electrode having approximately the same surface size as the at least one first electrode.

6. The sensor according to claim 1, wherein the at least one second electrode is a reference electrode communicating with a reference atmosphere, and the at least one first electrode is a measurement electrode.

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